

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2004/053594

International filing date (day/month/year)
17.12.2004

Priority date (day/month/year)
17.12.2003

International Patent Classification (IPC) or both national classification and IPC
C12N15/82, C07K14/415, A01H5/00

Applicant
CROPDESIGN N.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/053594

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☒ -a sequence listing
☐ - table(s) related to the sequence listing
 - b. format of material:
☒ in written format
☒ in computer readable form
 - c. time of filing/furnishing:
☒ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☒ furnished subsequently to this Authority for the purposes of search.
3. ☒ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. II Priority

1. ☐ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:
see separate sheet

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 1-6 (all partially), 8 (completely), 10-17 (all partially), 18-21 (all completely), 23 (partially), 25-34 (all partially)

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the whole application or for said claims Nos. 1-6 (all partially), 8 (completely), 10-17 (all partially), 18-21 (all completely), 23 (partially), 25-34 (all partially)
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
- | | |
|----------------------------|--|
| the written form | <input type="checkbox"/> has not been furnished |
| | <input type="checkbox"/> does not comply with the standard |
| the computer readable form | <input type="checkbox"/> has not been furnished |
| | <input type="checkbox"/> does not comply with the standard |
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
- ☐ See separate sheet for further details

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/053594

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
 - ☒ the parts relating to claims Nos. 1-6 (all partially), 7,9 (both completely), 10-17 (all partially), 22 (completely), 23 (partially), 24 (completely), 25-34 (all partially)

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1 - 7, 9 - 17, 23, 29 - 34
	No: Claims	22, 24 - 28
Inventive step (IS)	Yes: Claims	1 - 7,
	No: Claims	9 - 17, 22 - 34
Industrial applicability (IA)	Yes: Claims	1 - 7, 9 - 17, 22 - 34
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/053594

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/EP2004/053594

Re Item II**Priority**

The present application appears to be entitled to the filing date of the priority application. The P,X document cited in the International Search Report is thus not considered for assessing novelty and inventive step according to Article 33(2)(3) PCT.

Re Item IV**Lack of unity of invention**

1. Article 3(4)iii PCT and Rule 13.2 PCT stipulate that where a group of inventions is claimed the requirements of unity shall be fulfilled only where there is a technical relationship among those inventions involving one or more of the same corresponding special technical features. "Special" technical features are those features that define a contribution which each of the inventions makes over the prior art.
2. The only corresponding technical feature linking the different groups of inventions is that they all relate to polynucleotide sequences encoding proteins that are related to the human UBXD1 protein.
3. The technical problem may thus be formulated as the provision of sequences that encode human UBXD1-related proteins. Each of the different groups of inventions is supposed to provide a separate solution to the technical problem. The special technical feature linking these groups of inventions, namely sequences encoding human UBXD1-related proteins is not novel. Such sequences were already known in the prior art (e.g. Doerks *et al.*, 2002; TrEMBL AC Q9ZU93).
4. Consequently, there is lack of unity, and the different inventions not belonging to a common inventive concept, have been divided into different groups pursuant to Article 17(3)(a) PCT.

4. The groups are as follows:

Invention 1: Claims 1-6 (all partially), 7,9 (both completely), 10-17 (all partially), 22 (completely), 23 (partially), 24 (completely) 25-34 (all partially), relating to a polynucleotide encoding the polypeptide of SEQ ID NO:2 from *Nicotiana tabacum*, constructs containing said polynucleotide (SEQ ID NO:5), transgenic plants containing said polynucleotide, and methods of use of said polynucleotide.

Invention 2: Claims 1-6 (all partially), 8 (completely), 10-18 (all partially), 19 (completely), 20,21,23,25-34 (all partially), relating to the polynucleotide of SEQ ID NO:6 from *Oryza sativa*, the corresponding polypeptide of SEQ ID NO:7, transgenic plants containing said polynucleotide, and methods of use of said polynucleotide.

Invention 3: Claims 1-6 (all partially), 10-18 (all partially), 20,21,23,25-34 (partially), relating to the polynucleotide of SEQ ID NO:3 from *Saccharum officinarum*, the corresponding polypeptide of SEQ ID NO:4, transgenic plants containing said polynucleotide, and methods of use of said polynucleotide.

5. Applicant chose not to pay additional fees. Consequently this written opinion is limited to invention 1 as defined above.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

5. Article 33(2)(3) PCT (Novelty and inventive step)

1.1 The following documents (D) are referred to in this communication; the numbering will be adhered to in the rest of the procedure and is following the order of the International Search Report:

D1 WO-A-03085115 (CropDesign)

D2 Doerks *et al.*, 2002. Genome Res. 12:47-56.

D3 TrEMBL, AC Q9ZU93.

1.2 D1 discloses a sequence that is identical to SEQ ID NO:1 (Table 3, SEQ ID NO:61) and transgenic plants comprising said sequence (page 13, lines 23-26). SEQ ID NO:1 is a nucleic acid sequence encoding the protein of SEQ ID NO:2. Moreover, transgenic plants comprising said sequence are disclosed (page 13, lines 23-26). D1 thus anticipates the subject-matter of present claims 22, 24 and 25 - 28 directed to a construct comprising a nucleotide sequence encoding SEQ ID NO:2, a construct comprising SEQ ID NO:1 and transgenic plants comprising SEQ ID NO:1. They do all not meet the requirements of Article 33(2) PCT.

2.3 It is not apparent from the description that portions SEQ ID NO:1 or nucleic acid sequences hybridising therewith as claimed or homologues or derivatives of SEQ ID NO:2 as found in present claim 9 would solve the technical problem, i.e. the provision of a method for improving plant growth characteristics. The same holds true for the subject-matter of present claims 10 (iv), (v), (vi) and 11 - 17. A similar objection applies to claims 29 - 34.

2.4 Claim 23 is directed to an obvious variation of the known subject-matter of present claim 22 that is not considered to involve an inventive step. Claims 9 - 17, 23 and 29 - 34 do not meet the requirements of Article 33(3) PCT.

Re Item VIII

Certain observations on the international application

1. Present claim 1 does not meet the requirements of Article 5 PCT. The description does not credibly teach any other way for modifying plant growth characteristics than the expression of those nucleic acid sequences encoding GRUBX proteins from tobacco, rice and sugarcane. The same holds true for dependent claims 2 - 7, 9, 10 - 14 and for claims 15 - 17.

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